COST-BENEFIT ANALYSIS OF USAID/ SENEGAL'S RICE VALUE CHAIN INTERNVENTIONS: FINAL SUMMARY FINDINGS

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Cost-Benefit Analysis of USAID/Senegal's Rice Value Chain Interventions

Final Summary of Findings

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COST-BENEFIT ANALYSIS OF USAID/SENEGAL'S RICE VALUE CHAIN INTERVENTIONS UNDER THE PCE PROJECT: SUMMARY OF FINDINGS

Table 1. Headline Figures

Value Chain	ENPV[1]	ERR[2]
Irrigated Rice	US$ 50.68 mill	25%
Rain-fed Rice	US$ 3.27 mill	18%
TOTAL	**US$ 53.95 mill**	**24%**

PROJECT DESCRIPTION

USAID/Senegal's Projet Croissance Économique (PCE) started in May 2009 and project activities were completed in April 2015. The PCE project was implemented in line with Government of Senegal's (GoS's) development strategies, including the Programme de Relance et d'Accélération de la Cadence de l'Agriculture Sénégalaise (PRACAS) and the Plan Sénégal Emergent (PSE), which aim to achieve food security for small farmers and national self-sufficiency in rice production. This summary report discusses the 2015 cost-benefit analysis (CBA) of Senegal's rice value chains, which seeks to determine the project impact for both rain-fed and irrigated rice.

BENEFICIARY PROFILE

Irrigated Rice Cultivation System

The average age of a project beneficiary is 51 years. The average number of residents per farm is 15, nine of which are workers and just over half of which are male (52.36 percent). The vast majority of farms (85 percent) have a cultivated area of less than 5 hectare (ha). Male heads of farms hold 65-90 percent of cultivated areas. However, women's access to cultivated land is improving through the activities of women's farmer networks.

[1] The net present value (NPV) is the sum of the present values (PVs) of incoming and outgoing cash flows over a period of time. Economic Net Present Value (ENPV) is the sum of incoming and outgoing resources which are defined beyond just cash flows and are described as benefit and cost resource flows, respectively.

[2] Internal (or Financial) Rate of Return (IRR) is the (break-even) interest rate at which investors can expect to start receiving positive returns. The Economic Rate of Return (ERR) differs from the financial rate of return in that it takes into account the effects of factors such as price controls, subsidies, and tax breaks to compute the actual cost of the project to the economy.

Rain-fed Rice Cultivation System

The majority of project beneficiaries (65 percent) are between 40 and 70 years of age, with a further 22 percent under the age of 40 and 13 percent over the age of 70. The average number of residents per farm is 19, 59 percent of which are female. The average area under cultivation is 7.74 ha per farm, for all crops, with an average surface area allocated to rice farming of 0.5 ha per farm. Women carry out the majority of work associated with rain-fed rice farming, with production used primarily for family consumption.

KEY RISK AREAS

Irrigated Rice Cultivation System

In line with the goal of achieving national self-sufficiency in rice production, the GoS allocates significant resources to rice farmers through subsidies, including fertilizer, agricultural equipment, and construction of irrigation schemes. Other distorting incentives for farmers include tax exemptions on agricultural inputs, exemption from Value Added Tax (VAT) for rice, interest rate subsidies and loan amnesties. Furthermore, the country's nine rice importers are required to purchase a certain volume of domestically-produced rice, creating a false sense of the competitiveness of local rice compared to cheap import substitutes. The effective tariff protection rate for local rice is 12.7 percent.

In the context of the project, the Financial Net Present Values (FNPV)[1] of the "without" and "with" project scenarios are positive. However, the Economic Net Present Value (ENPV)[2] of the "without" project scenario is negative. The ENPV of the "with" project scenario is slightly positive with an ERR (Economic Rate of Return)[3] of 13 percent, indicating that without GoS subsidies, current productivity of the rice value chain (VC) may not be sustainable. As such, adverse changes in government policy in the short- to medium-term could represent a significant risk to project achievements in the long run.

Rain-fed Rice Cultivation System

The traditional rain-fed rice-production system is non-cash based. That is to say, farmers do not purchase any production inputs and do not market the paddy produced. Under such a system, the key risk variable is the adoption rate of modern cultivation practices using certified seed. If short of cash, farmers may return to their traditional approach.

This also assumes that certified seeds are readily available. If this is not the case, it may jeopardize project success in the long term. GoS interventions to distribute certified seeds to farmers free-of-charge could undermine development of local production of certified seeds, a goal of the current project.

KEY RECOMMENDATIONS

The following are the key recommendations drawn from the analysis:

1. **Senegal's rice-production sector exhibits multiple distortions that are the result of significant support from the donor community and the GoS.** The long-term positive impact of the PCE project therefore requires that donors and the GoS develop a clear exit strategy that encourages farmers to pursue agricultural activities with limited or no assistance from the GoS and other donors including USAID.

2. **The wide promotion of rice cultivation and consumption may impose significant health risks, particularly in the low income rain-fed regions.** During interviews, farmers repeatedly and proudly stated that they now are consuming only rice throughout a day (breakfast, lunch and dinner). Such poor nutrition will negatively affect the health conditions of the farmers. Donors and the GoS should promote diversification of cultivation to include other staple crops in addition to educating the population on nutrition and the importance of a diverse diet through media and other channels.
3. **Availability of certified seeds still remains a risk factor for the long-run economic returns of PCE project interventions.** It is recommended to closely monitor factors affecting availability of certified seeds and continue improving domestic seed production during the Naatal Mbay project.
4. **Analysis revealed the PCE project effectively addressed many issues resulting in low quality local rice production in the Senegal River Valley.** Therefore, new assistance should also focus on addressing existing infrastructure gaps, such as poor conditions of milling infrastructure. In rain-fed rice producing areas the focus should also be on market creation, diversification of production to improve dietary habits, and access to micro credit.

METHODOLOGY AND MODEL DESCRIPTION

The Integrated Investment Appraisal (IIA) methodology is used to evaluate both the financial and the socio-economic effectiveness of FED interventions and assess their impacts from various perspectives. IIA is the only single-model approach to quantify the impact of every project-related transaction, from the investor (USAID) to tax revenues, fiscal expenditure, consumers, and the environment. Major development banks, donor agencies, and public investment units use this methodology in project evaluations.

The analysis is applied to a 20-year evaluation period, 2012-32, and compares "with-project" and "without-project" scenarios on an incremental basis, with real financial and economic discount rates set at 12 percent. The model is constructed on an annual basis with a base year of 2015. The results are expressed in 2012 prices. The model first derives nominal cash flows, which are then discounted using corresponding price indexes to derive real cash-flow statements. The analysis uses World Bank inflation and exchange rate data.